COMPANY WITH CERTIFIED QUALITY SYSTEM

UNI EN ISO 9001 & EN 13485

MEDICAL APPLIANCE DIVISION

Cod.3125 **GB**

Operation and maintenance manual

STEAM STERILIZERS

MODELS

STERILIX 2 PLUS

STERILIX VACUUM PLUS

STERILIX STAR

Reverberi s.r.l. thanks you for having bought one of its products and asks you to read this manual.

The manual contains all the information you require in order to use the machine you have purchased. Please carefully comply with the instructions given in the manual and carefully read all its parts.
Keep the manual in a suitable place so that it remains in a perfect condition.

Following improvements or variations to the appliances, the contents of this manual may be liable to modification without prior notice or other obligations.

This manual contains an installation form which must be fully filled out by the technician when he installs the machine.
This form will be considered the reference certificate that validates the warranty. It must be sent back to us along with the printer coupon and warranty form.

Duplication or translation of any part of this manual is forbidden unless prior written authorization has been obtained from the Manufacturer.

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1. INTRODUCTION

The machine described in this operation and maintenance manual is a steam sterilizer that has been specially designed to sterilize most of the materials and instruments used in dental surgeries, doctors' surgeries and hospitals in general.

The machine can either operate at a temperature of 134°C and a pressure of 2.1 Bar or 121°C and a pressure of 1.1 Bar. These parameters are monitored and kept at constant levels by three mechanical and electronic devices that ensure an optimal sterilizing process along with total safety.

The operating cycles can be visually checked on a display installed on the control panel of the machine, or by means of a printer supplied on request.

The machine has been built so that the work cycle will automatically stop and the situation be indicated by an error message on the display if the operator fails to carry out the loading operations correctly or if a fault occurs.

Do not use the machine for purposes other than those for which it has been built.

Comply with the pertinent laws in force in the country of use if the machine is demolished.

To prevent the autoclave from being subjected to electrical disturbance, it is important to make sure that the earth resistance value is sufficient and well coordinated with the protections in your electrical system.

2. TECHNICAL SPECIFICATIONS

STERILIX are autoclaves designed and built in compliance with the operators' need for functionality, practical use and safety.

STERILIX are fully automatic. All functions are electronically servo-assisted, so the operator knows what the machine is doing at any given moment.

STERILIX have functional characteristics that make them unique, i.e.:

- **AUTOMATIC POWERING**, thanks to which the electric heating element maintains the chamber at a temperature of 80°C for up to 60 min., after which it will automatically switch off if not used.
- **STERILIX** activates an anti-condensation function after each cycle, if the door is not opened within 30 min.
- Gradual heating to obtain a more accurate temperature and a better sterilizing process.
- **AUTOMATIC WATER FILLING** by means of an electric pump.
- Built-in **DRYING CYCLE**: **STERILIX 2 PLUS** by means of an evaporation system; **STERILIX VACUUM PLUS, STERILIX STAR** and **STERILIX STAR FAST** by means of a vacuum pump.
- **AUTOMATIC AIR EXHAUST** to eliminate the air from inside the chamber at the beginning of the cycle, thus achieving the utmost steam saturation.
- **DOUBLE SAFETY VALVE** to prevent overpressures.
- **SAFETY THERMOSTAT** to prevent overtemperatures.
- Electronic **CHECK CONTROL** of each function with message display.
- Press-moulded seamless 18/10 **STAINLESS STEEL CHAMBER**.
- **15 ½ l. CAPACITY** chamber which can be fitted with up to five trays.
- **DOUBLE TANK** for the water: the **FIRST FOR FILLING** and the **SECOND FOR DRAINING + USED WATER CAN.**
- **PRE-VACUUM** to –700 mBar by means of a vacuum pump (only in mod. STERILIX STAR and STERILIX STAR FAST)

Description	Unit of measurement	Values
Power source voltage rating	V	230 V.a.c. ~
Power source frequency	Hz	50
Machine power rating	W	1500 / 2500 (for Mod. STERILIX STAR FAST
Boiler volume	mm	Ø 240 x 340
Operating pressure	Bar	2.1 - 1.1
Machine dimensions X, Y, Z	mm	510 x 450 x 390
Gross weight	Kg	49.5
Pack dimensions	mm	650x550x560
Operating temperatures	°C	+ 3°C… 35°C
Distance from walls	cm	8 – 10

X = depth Y = width Z = height

The electrical system is protected against the risk of over-currents installed inside the machine by two 15 A delayed action fuses (T 15 A) for mod. STERILIX STAR FAST and 10A (T 10 A) for other models.

The electronic control and powering boards protect the various users by means of 3 dedicated fuses: 2 quick-acting 1 A types (F 1 A) and one 100 mA delayed action type (T 100 mA) – (see enclosed wiring diagram).

Only have these fuses changed by a skilled electrician.

The machines have been designed to operate up to an altitude of 1200 mm above sea level. Contact the manufacturer if the machine must operate at a higher altitude as special models and/or devices may be required.

The noise level of the machine has been tested. The continuous equivalent weighted acoustic pressure level A is less than 70 dB (A) and the continuous equivalent weighted acoustic power level A does not exceed 85 dB (A). The measured noise level measured is therefore very low. For this reason, the operator need not take any particular measures (also in view of the fact that the machine operates automatically).

DATA AND SPECIFICATIONS OF THE PRESSURIZED VESSEL:

Serial N° of vessel, Serial N° of door	Month N°, Year N° (see internal label)
Max. operating pressure:	2.2 Bar
Max. operating temperature:	160°C
Min. operating pressure:	-0.9 Bar
Test pressure:	8 Bar
Reference standards:	TRD 421
Volume of vessel:	15.5 l.

3. GENERAL RECOMMENDATIONS

3.1 Regulations for the operator

- Always wear personal protective equipment in compliance with the directives that establish the current accident-preventing provisions.
- Do not approach the machine with inflammable materials.
- Do not carry out repairs or maintenance work whilst the machine is operating or plugged into the electricity main or when parts of it are hot.
- Only responsible adults may use the machine in places inaccessible to children.
- Use the machine in a dry place, sheltered from the rain.
- Periodically inspect the power cable to make sure that it is in a good condition.
- If there are several persons in the place of work, remember to keep at a safe distance from the machine to prevent accidental contact with hot parts.
- Never ever operate the appliance unless the power cable is in a perfect condition and the structure undamaged.
- It is advisable to keep the door half-open with switch (10) turned off in "0" position, when the appliance is not in use.

Pay the utmost attention to those parts of the appliance that become hot during operation and that still remain hot after it has been switched off. Keep your face well away from the top part of the machine when the door is opened to prevent it from being scalded by steam. Keep about 50 cm. away from the machine when opening the door.

As specified in the technical specifications, these autoclaves operate at a pressure that can reach 2.2 Bar at most. Do not use the autoclave in an improper way and do not carry out maintenance operations while the sterilizing cycles are in progress. Remember that the pressure is shown by the pressure gauge installed on the front of the machine itself.

Wait at least 20 minutes after the appliance has been switched off, to allow the boiler to completely cool.

4. LOCATION OF THE CONTROLS

STERILIX feature an elegant casing treated with scratch-proof epoxy powder paint in the **RAL 7035 COLOUR**. No particular preparations are required to operate the machines. Just fit the plug into a 230 V power socket. The control panel is elegantly designed, easy to read and consists of (see page 9):

- 1 - TIMER KEY

- 2 - INFO - DISPLAY

- 3 - 134°C PROGRAM BUTTON

- 4 - 134° PROGRAM START INDICATOR LED

- 5 - 121°C PROGRAM BUTTON

- 6 - 121°C PROGRAM START INDICATOR LED

- 7 - PUMP BUTTON

- 8 - MAXIMUM LEVEL INDICATOR LED

- 9 - MINIMUM LEVEL INDICATOR LED

- 10 - MAIN SWITCH

- 11 - DOOR OPENING LEVER

- 12 - WATER FILL UNION

- 13 - PRESSURE AND VACUUM GAUGE

- 14 - WATER DRAIN UNION

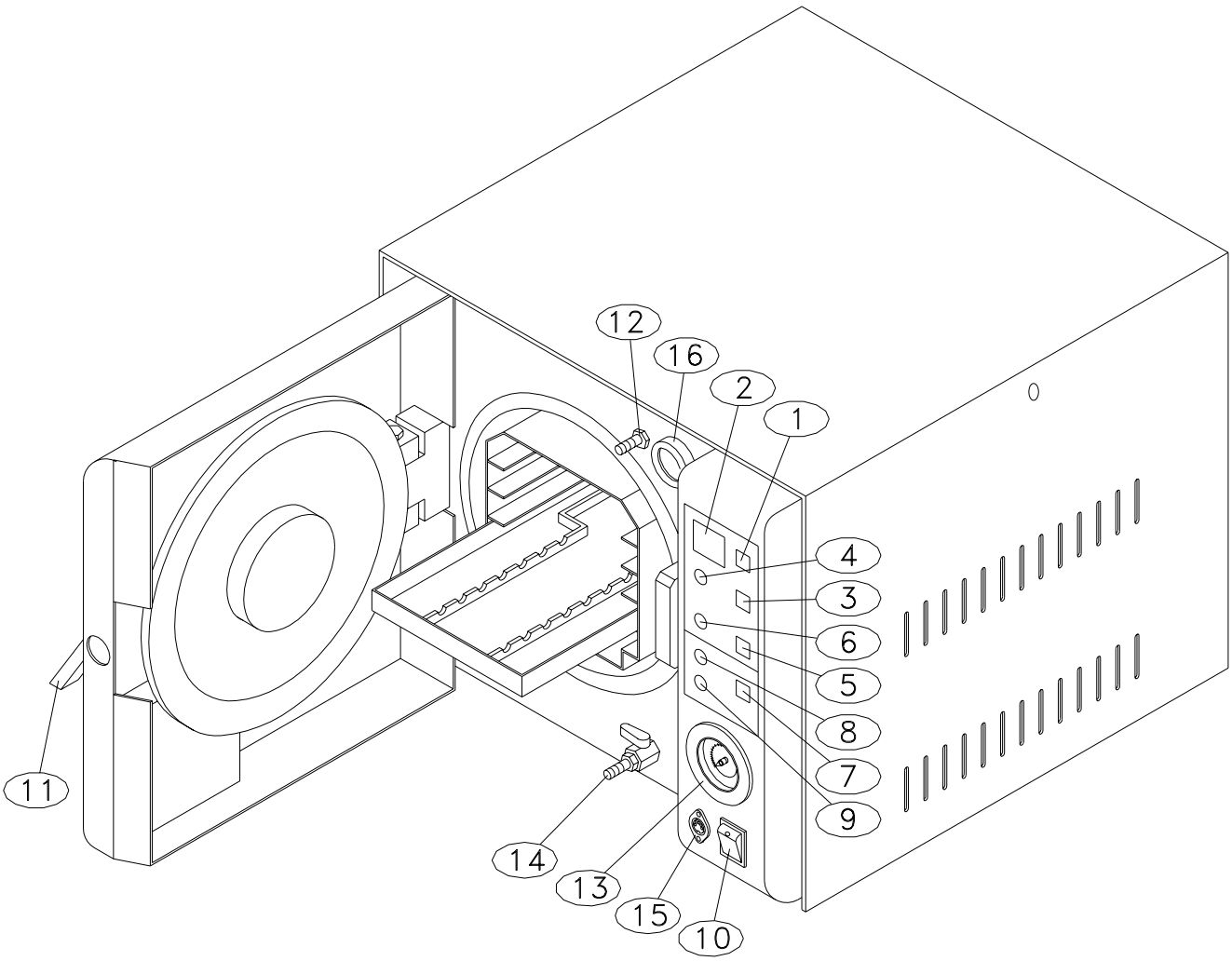
- 15 - PRINTER CONNECTING SOCKET

- 16 - MANUAL WATER FILL PLUG (STERILIX 2 PLUS)

- 16 - BACTERIOLOGICAL FILTER (STERILIX VACUUM PLUS, STAR and STAR FAST)

THE FOLLOWING ACCESSORIES ARE SUPPLIED:

1 TRAY HOLDER, 5 TRAYS, 1 TOOL TO TAKE OUT THE TRAYS AND ADJUST THE DOOR, 1 PIPE WITH FILTER FOR WATER FILLING, 1 WATER DRAIN PIPE, 1 TRANSPARENT ∅6 TUBE TO DRAIN WATER INTO THE CAN, 1 PIPE WITH FUNNEL TO DRAIN OFF THE WATER BY HAND (MOD. **STERILIX 2 PLUS** ONLY), 1 SPONGE, 1 INSTRUCTION MANUAL, 1 10 LITER CAN, 1 LIFTING HANDLE.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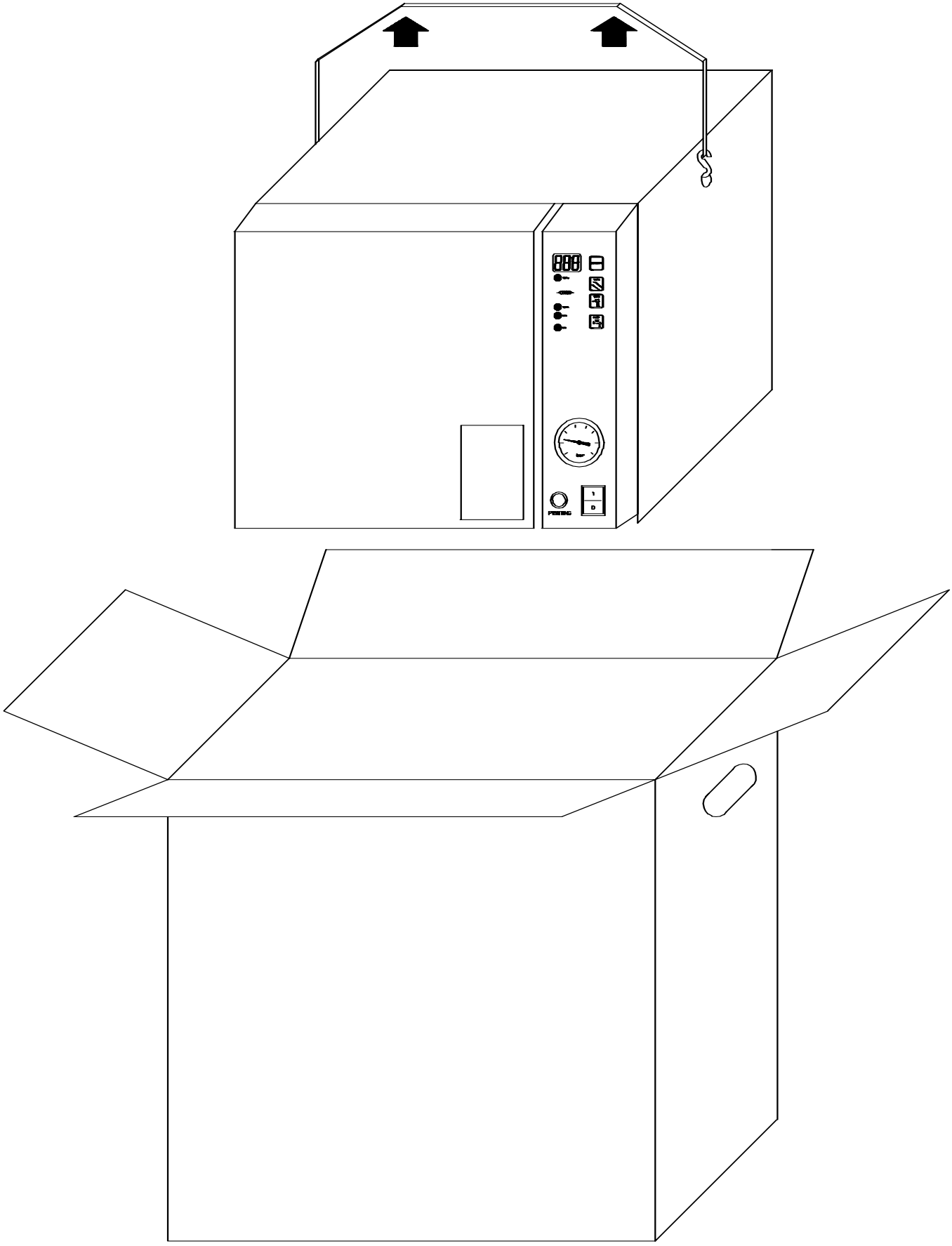
5. STARTING AND SETTING AT WORK

Carry out a cycle of dry-run tests using one of our mod. M 9002 or M 9003 printers.
Keep the receipt which should be attached to the installation form and sent off along with the warranty.

5.1 Removing the machine from the packing

The machine is consigned packed on a wooden pallet in a cardboard box: make sure that there are no dents and that the wrapping is in optimum conditions.
The machine must be stored in a dry place, sheltered from adverse weather conditions, at a temperature between +3°C and +35°C.
The machine must be handled without jolting and using appropriate means.
Open the pack without overturning it.
Remove the polystyrene from the top and sides (the weight of the model is given in chap. 2, technical specifications).
Lift the machine out of the box in a vertical direction using the 2 hooks supplied in the bag inside the pack. These should be inserted into the two holes at the sides of the casing (**see drawing on page 11**).
Remove the pluriball wrapping from around the machine and make sure that all parts of this latter are undamaged and complete with all the accessories indicated on the consignment note. Immediately notify our dealer if discrepancies are discovered.
Keep the packing materials for as long as the machine remains in use, not just for the warranty period. This is because the autoclave may need to be calibrated or regulated by the manufacturer's staff of by an after-sales center. Non-original packing is unable to ensure that the machine is correctly protected during transport.
The original packing comprises the following items:
- BIWALL BOX IN CARDBOARD WITH 3 CORRUGATIONS
- PLURIBALL POLYETHYLENE BAG
- SHAPED POLYSTYRENE FOAM
- PALLET INSIDE THE BOX

DRAWING ILLUSTRATING HOW THE MACHINE MUST BE LIFTED FROM THE PACK



5.2 Installation and preliminary inspections

The installer is obliged to make sure that the place in which the sterilizer is installed is fit for that purpose (CEI 62/4).

The machine is sent packed on a wooden pallet. Make sure that the packing has not been damaged and that everything is in a perfect condition. Handle the box by means of its handles and place it on a surface in the immediate vicinity of the place in which the machine is to be positioned (the weight of the model is given in chap. 2, in the technical specifications).
Remove the machine from its wrapping by pulling it out of the box vertically, using 2 hooks (available on the market) inserted into the two holes at the sides of the casing. Remove the polystyrene filler balls from around the machine. Make sure that none of the parts has been damaged and that the machine is complete with all the accessories indicated in the consignment note. Immediately contact our reseller if discrepancies are discovered.

Install the autoclave in a well ventilated place, well away from sinks, heat sources, grinders and from all other machines.

Place the autoclave delicately on to a perfectly flat surface. Take care to leave a space of about 8-10 cm all around the machine to allow for aeration and make sure that the internal chamber is perfectly parallel to the ground.

Comply with the following instructions to simply and efficiently check that the machine has been positioned correctly:

- Open the door of the machine using the handle (11).
- Remove the tray holders complete with trays.
- Pour distilled water into the boiler using a normal glass.
- Check how the water settles over the surface of the boiler:
  if the water settles in a uniform way all over the depth of the boiler, this means that the machine has been positioned correctly. If the water accumulates in the front or rear of the boiler, this means that the machine is tilting towards the front or back.
- To correct a tilting machine, place shims under the front feet to level off the water.
- Dry off the previously added water and proceed with the installation phase.

Fit the electric plug into a socket **WITH A CAPACITY OF AT LEAST 16 Ampere AND EQUIPPED WITH AN EARTH CONNECTION**. Make sure that the mains voltage rating corresponds to the value indicated on the label at the rear of the machine (230 Volts).

STERILIX must only be filled with **DISTILLED WATER** to ensure that the electrical and air-operated devices operate efficiently and are long lasting.

Never connect the plug of the machine to a reduction.

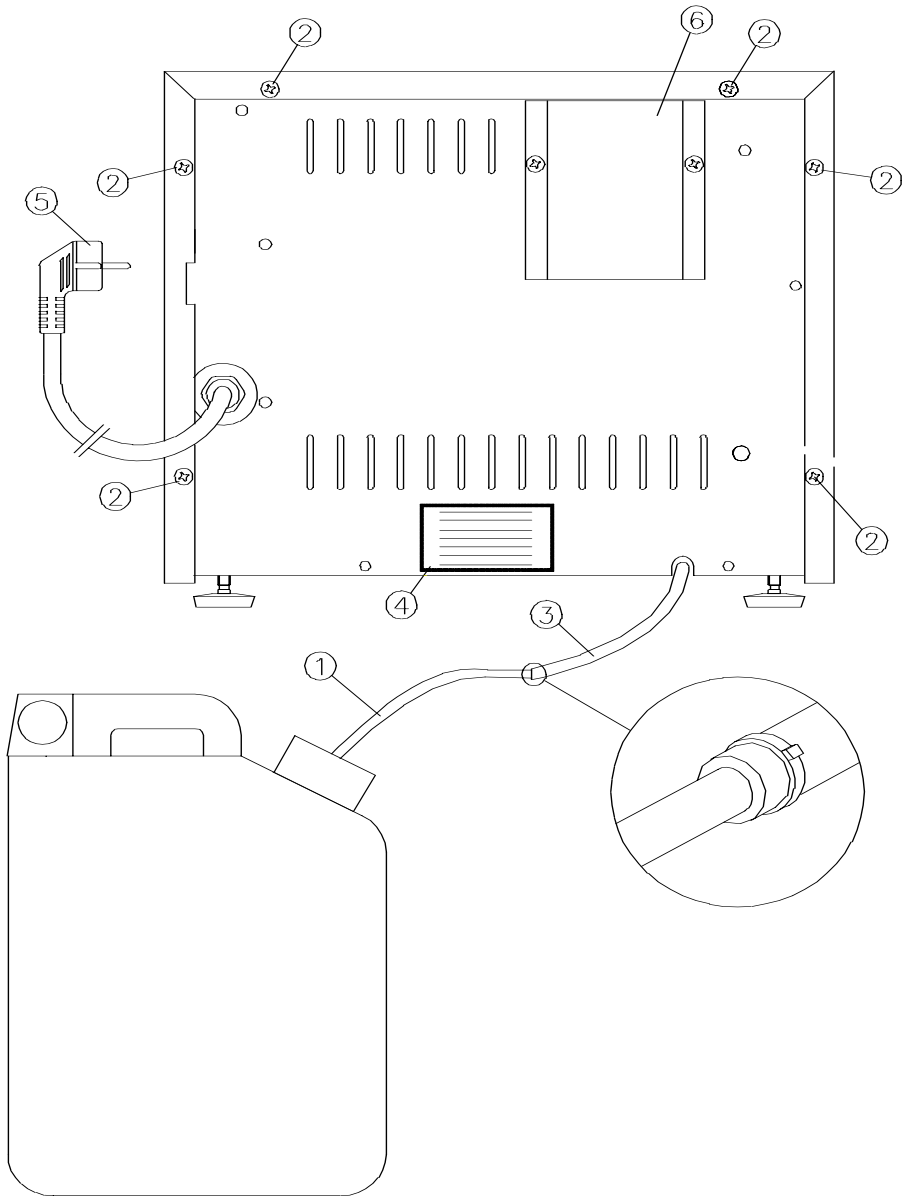
Do not install the machine in places at altitudes of more than 900 m. above sea level.

If this is the case, contact the manufacturer for a special version of the machine.

Use a bubble level to make sure that the surface on which the appliance is to be positioned is perfectly horizontal.

Fill out and send off the warranty form.

DESCRIPTION OF THE REAR PART



1) Can tube to connect to the used water drain tube “3”
2) Screws to fix the casing.
3) Used water drain tube to connect to the can by means of tube "1"
4) Label with the following data: Model, CE marking, power supply voltage and frequency ratings, power draw, serial number, year of manufacture, manufacturer's generalities.
5) Power cable with Shuko France plug.
6) Protective casing for the safety valve.

5.3 Printer connection

Purchase Reverberi printers code M9002 without date stamp or code M9003 with date stamp, from one of our authorized centers.
To install the printer, just connect its jackplug to socket N° 15 of the autoclave.
Now connect the printer plug to a power socket.

- Carefully read the supplied printer operation manual.
- Power the printer by means of its switch.
- Power the autoclave.
- During the sterilizing cycle, the printer will automatically indicate the progressive number of the cycle and the various operations in progress. If it is equipped with a date stamp, it will also indicate the date at the end of the cycle, by means of the multi-function button.

The installer should file the first sterilizing cycle prints obtained during the dry-run tests in the purchaser's surgery conducted with the autoclave completely empty (without a load in the chamber).
This printer coupon should be sent to the manufacturer along with the warranty form in order to validate the actual warranty itself.

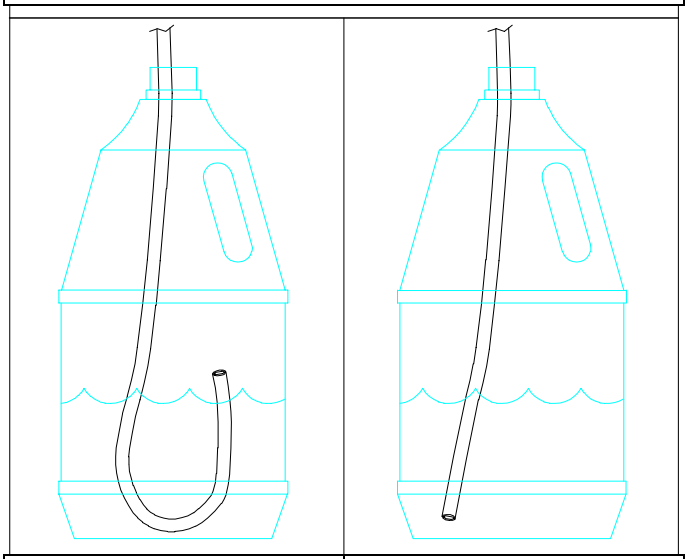
6. GENERAL INSTRUCTIONS FOR USE

6.1 Method of use

OPEN THE DOOR.

START the machine by pressing the **main switch (10)**.
The display will light up (2). Symbol **[- - -]** will appear followed by message **[888]**, an **acoustic signal and then, very briefly, the PRE message**.
When the machine is installed for the first time, the **message [H2O]** will appear on the display and **the minimum level led (9) will come on**.
Fill the **PRIMARY TANK** with distilled water using the supplied pipe. Connect the free end of the pipe to **connection (12)** and immerse the pipe into the distilled water container. Press the **PUMP BUTTON (7)** to operate the pump and keep it depressed until the **[FUL]** message appears on the display (2) along with an acoustic signal; the **maximum level indicator led (8)** will also come on.

HOW TO CORRECTLY FIT THE TUBE
THAT FILLS THE CANISTER WITH WATER



NO	OK

Once the filling phase has terminated, a **number** will appear to indicate the **temperature** in the chamber at that moment, which can range from 15° to 80°C.
Only after the above described messages have appeared will the machine be ready to operate. Load it with instruments and proceed by selecting the required program (121° - 134°).
If no program has been selected within 30 min. after the main switch is operated, the machine will automatically turn off and message **[SLP]** will appear on the display (2) to indicate that the heating function has stopped. **STERILIX** activates an anti-condensation function after each cycle, if the door is not opened within 30 minutes.

6.2 End of work

After the operations have terminated, set the green main switch (10) to position 0 and open the door.

Pay particular attention to the temperature of the various components when you switch off the machine.
Wait a few minutes to allow the components to cool.

7. HOW TO ARRANGE THE INSTRUMENTS FOR THE STERILIZING PROCESS

Before being sterilized, the instruments must be cleaned to remove blood residues, incrustations, foreign bodies, etc. These impurities can damage the items being sterilized, the autoclave components and prevent the sterilizing process from being correctly carried out.

These instruments must be made of NON-ferrous material since they could damage the other instruments or the autoclave itself.

To achieve perfect sterilizing, it is therefore important to proceed in the following way:

1. Rinse and brush the instruments under running water immediately after use to remove all deposits.
2. Place the instruments in the ultrasound machine with distilled water and detergent solution if possible.
3. Thoroughly rinse the instruments in demineralised water to prevent scaling stains.
4. Dry the instruments to eliminate all water residues which could lead to oxidation.
5. Wash, rinse and dry the supplied trays and make sure that they are perfectly clean.
6. To ensure that packaged instruments are perfectly dried, we recommend use of support art. M9050 supplied as an optional.
7. If loose instruments must be sterilized, it is advisable to cover the trays with a paper or fabric napkin to prevent direct contact with the tray surface: do not place the instruments straight on to the trays.
8. Scissors and forceps should be slightly opened. Mirrors and containers should be placed upside down for the sterilizing process.
9. It is advisable to keep the instruments separated from each other to achieve a better sterilizing action. Overloading will impair the sterilizing process.
10. If packaged instruments must be sterilized on the trays, place the packets with their transparent side downwards and do not overlap. The packets should not be too large. Drying will be difficult if their edges overlap.
11. The machine can operate with a maximum 3 Kg load.

Sterilizing handpieces:

- Carefully read the handpiece operation manual with particular attention to the part about sterilizing.
- Wrap the handpiece in the special sterilizing cloth.
- Place the wrapped handpiece on a NON-perforated tray to prevent spilt lubricating oil from polluting the pipes of the autoclave.
- Proceed with a short cycle 121°C sterilizing program.
- Remember to immediately remove the handpiece from the autoclave at the end of the sterilizing process.
- It is inadvisable to sterilize handpieces using the night cycle.

Weigh the load to sterilize to use the MINUTE SUBTRACTION function. It should not weigh more than 1½ Kg.

For a valid sterilizing process, it is obligatory to add a chemical indicator for each cycle.

8. PROGRAM SELECTION

8.1 121ºC program

Ideal for handpieces, other types of rotating instruments, various types of packaged and loose instruments, plastic and liquid materials.

OPEN DOOR WITH SWITCH (10) TURNED OFF IN "0" POSITION (IMPORTANT)

Place the trays containing the instruments to be sterilized into the machine.

Press button (10) to active the sterilizers.

Press button (5) to activate the program. The **corresponding indicator led (6)** will come on and the message **[PR2]** will appear on the display for a few seconds.

Carefully close the door but only when a fixed (NOT flashing) number appears on the display to indicate the temperature in the chamber. Clamp the door in place with the relative **lever (11)**.

Once the door has been closed, the machine will proceed with the automatic warming-up phase and then with the sterilizing process. Starting may be delayed if the internal temperature is high.

The 121° C cycle lasts **45 minutes**, the last 15 min. of which are used to dry the instruments.
A **flashing number 45** will appear on the display to indicate the warming-up phase.

The sterilizing cycle will begin when the pressure in the chamber reaches about **1 Bar** (shown on the **pressure gauge (13)**), and the machine has reached the preset temperature: the time will be counted down on the display, the selected minutes will stop flashing and only symbol [**-**] will flash.

During the last phase, **display (2)** will visualize a code to indicate the time remaining for the automatic drying phase to be completed [A15].

A vacuum will be formed in the chamber and the pressure value on the **pressure gauge (13)** will reset.

At the end of the sterilizing process, the message **[End]** will appear on the display for a few seconds accompanied by an acoustic signal and then by the message **[Str]**. The door can now be opened by raising the **lever (11)** and the perfectly sterilized instruments removed.

NOTE: ONCE THE DOOR OF THE MACHINE HAS BEEN SHUT AND A PROGRAM ACTIVATED, IT IS ABSOLUTELY FORBIDDEN TO OPEN THE DOOR AGAIN FOR ANY REASON WHATSOEVER (e.g. to add a forgotten instrument) UNTIL MESSAGE [Str] APPEARS ON DISPLAY (2).

8.2 134ºC program

Ideal for packaged and loose instruments and for instruments without mechanisms.

OPEN DOOR WITH SWITCH (10) TURNED OFF IN "0" POSITION (IMPORTANT)

Place the trays containing the instruments to be sterilized into the machine.

Press button (10) to active the sterilizers.

Press button (3) to activate the program. The **corresponding indicator led (4)** will come on and the message **[PR1]** will appear on the display for a few seconds.

Carefully close the door but only when a fixed (NOT flashing) number appears on the display to indicate the temperature in the chamber. Clamp the door in place with the relative **lever (11)**.

Once the door has been closed, the machine will proceed with the automatic warming-up phase and then with the sterilizing process. Starting may be delayed if the internal temperature is high.

The 134° C cycle lasts **35 minutes**, the last 15 min. of which are used to dry the instruments.
A **flashing number 35** will appear on the display to indicate the warming-up phase.

The sterilizing cycle will begin when the pressure in the chamber reaches about **2.1 Bar** (shown on the **pressure gauge (13)**), and the machine has reached the preset temperature (cycle start indicator led (4) will flash): the time will be counted down on the display, the selected minutes will stop flashing and only symbol [**-**] will flash.

During the last phase, **display (2)** will visualize a code to indicate the time remaining for the automatic drying phase to be completed [A15].

A vacuum will be formed in the chamber and the pressure value on the **pressure gauge (13)** will reset.

At the end of the sterilizing process, the message **[End]** will appear on the display for a few seconds accompanied by an acoustic signal and then by the message **[Str]**. The door can now be opened by raising the **lever (11)** and the perfectly sterilized instruments removed.

NOTE: ONCE THE DOOR OF THE MACHINE HAS BEEN SHUT AND A PROGRAM ACTIVATED, IT IS ABSOLUTELY FORBIDDEN TO OPEN THE DOOR AGAIN FOR ANY REASON WHATSOEVER (e.g. to add a forgotten instrument) UNTIL MESSAGE [Str] APPEARS ON DISPLAY (2).

8.3 121°/134° fractionated program (for mod. STAR and STAR FAST only)

Optimum for packeted and loose instruments, hollow items and boxes

OPEN DOOR WITH SWITCH (10) TURNED OFF IN "0" POSITION (IMPORTANT)

Place the trays containing the instruments to be sterilized into the machine.

Press button (10) to active the sterilizers.

Press button (1) several times until the message **[FRA]** appears on the display.

The message **[FRA]** sometimes alternates with **[H2O]**. In this case, add water by **pressing button (7)** until the pump stops and the message **[FUL]** appears. You are also advised to empty the used water tank even if the **[USD]** message does not appear.

Select the desired cycle temperature by means of buttons **(3)** and **(5)**.

Carefully close the door but only when a fixed (NOT flashing) number appears on the display to indicate the temperature in the chamber. Clamp the door in place with the relative **lever (11)**.

Once the door has been closed, the machine will proceed with the automatic warming-up phase and then with the sterilizing process. Starting may be delayed if the internal temperature is high.

Deduct the time as required according to table 8.4 and using button **(1)**, depending on the material being sterilized.

During the last phase, a code indicating the time remaining in the automatic drying phase **[A15]** will appear on **display (2)**.

A vacuum will be formed in the chamber and the pressure value on the **pressure gauge (13)** will reset.

At the end of the sterilizing process, the message **[End]** will appear on the display for a few seconds accompanied by an acoustic signal and then by the message **[Str]**. The door can now be opened by raising the **lever (11)** and the perfectly sterilized instruments removed.

NOTE: ONCE THE DOOR OF THE MACHINE HAS BEEN SHUT AND A PROGRAM ACTIVATED, IT IS ABSOLUTELY FORBIDDEN TO OPEN THE DOOR AGAIN FOR ANY REASON WHATSOEVER (e.g. to add a forgotten instrument) UNTIL MESSAGE [Str] APPEARS ON DISPLAY (2).

8.4 Supplementary drying program (DRY)

Optimum for packeted instruments that are still wet after sterilizing

OPEN DOOR (IMPORTANT)

Press button (1) several times until the message **[DRY]** appears on the display.

The supplementary drying phase, which lasts 9 minutes, begins as soon as the door is closed.
The **[DRY]** message will flash throughout the cycle until the **[Str]** message appears again.

To prevent demage to the instruments, it is important to ensure that the supplementary drying cycle is not carried out when they are already at the end of the normal sterilizing cycle. This is particulary important when the instruments are not packeted.

8.5 Bowie & Dick Test (for mod. Sterilix Star, Star Fast and V. Plus only)

OPEN DOOR WITH SWITCH (10) TURNED OFF IN "0" POSITION (IMPORTANT)

Insert the trays containing the packet in the center to conduct the test for steam autoclaves with vacuum pump.

Press button (10) to active the sterilizers.

Press button (1) several times until the message **[Bod]** appears on the display.

Carefully close the door but only when a fixed (NOT flashing) number appears on the display to indicate the temperature in the chamber. Clamp the door in place with the relative **lever (11)**.

Once the door has been closed, the machine will proceed with the automatic warming-up phase and then with the sterilizing process. Starting may be delayed if the internal temperature is high.

The message **[Bod]** will flash until the pressure reading on the pressure gauge becomes 2.1 bar, after which it will remain permanently on.

The test lasts 3 minutes and no minutes can be deducted.

The alternate message **[Bod] [End]** will appear once the test has terminated.

If the printer is connected, it will print-out a note with the final message BOWIE DICK TEST END.

NOTE: ONCE THE DOOR OF THE MACHINE HAS BEEN SHUT AND A PROGRAM ACTIVATED, IT IS ABSOLUTELY FORBIDDEN TO OPEN THE DOOR AGAIN FOR ANY REASON WHATSOEVER (e.g. to add a forgotten instrument) UNTIL MESSAGE [Bod] [End] APPEARS ON DISPLAY (2).

8.6 Sterilizing table

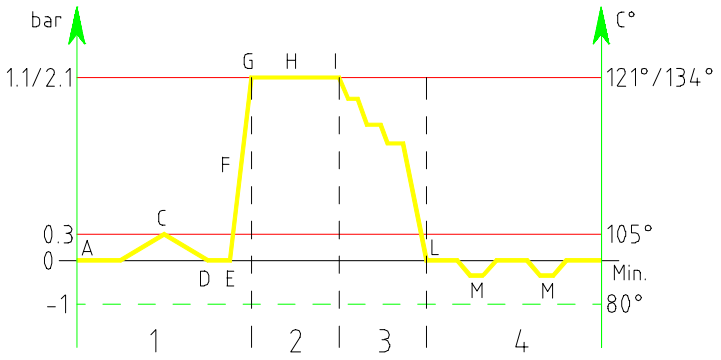
STANDARD STERILIZING CYCLE					*SHORT STERILIZING CYCLE*		
Programs	*Materials*	*Minutes displayed*	*Drying minutes*	*Sterilizing minutes*	*Subtracted minutes*	*Obligatory residual minutes*	*Displayed minutes including drying phase*
Pr 01 Non-packaged 134°	- metallic solids - glassware	35	15	20	15	5	20
Pr 01 packaged 134°	- metal instruments - fabrics - gauzes and cotton	35	15	20	Not recommen-ded	Not recommen-ded	35
Pr 02 Non-packaged 121°	- metallic solids - rubber materials - plastic materials	45	15	30	15	15	30
Pr 02 packaged 121°	- handles - turbines - delicate solids - rubber materials - plastic materials	45	15	30	Not recommen-ded	Not recommen-ded	45
Pr dry Supplementary drying for packaged materials	- packaged or wrapped materials, excluding turbines and handpieces	DrY	9	/	/	DrY	DrY
Str Night cycle stand-by	- packaged or wrapped materials excluding turbines and handpieces	Str	10 h. maintenance drying	/	/	/	/
FRA (Fractionated) 134° (Star and Star Fast only)	- Boxes - Hollow items	35	15	20	/	/	/
FRA (Fractionated) 121° (Star and Star Fast only)	- Boxes - Plastic materials	45	15	30	/	/	/

8.7 Notes and warnings

1- Strictly comply with the manufacturer's instructions when sterilizing materials.
2- To preserve packaged and loose sterilized materials, the trays must be stored in special cabinets fitted with ultraviolet lamps and designed for this specific use.
3- If the articles are to be stored for a longer period, it is advisable to use our covered trays code 1474 + 2682 and tray holders code 2631 supplied on request.
4- Whenever a sterilizing process is carried out, it is advisable to add a chemical indicator that we can supply on request, code 1468.
5- It is advisable to purchase a printer with date stamp code M 9003 to file and record the sterilizing cycles and any faults that may have occurred.
6 - There must always be trays and tray-holders in the chamber. Without these accessories, abnormal pressures and temperatures could develop inside and these could cause the cycle to abort.
7 - It is advisable to place a phial containing culture spores in the chamber along with each load sterilized in order to make sure that the sterilizing process is valid.
8 - When packeted materials are sterilized, it is very important to use support art. M9050. This support can hold up to 20 packets (max. 3 instruments per packet). To use this accessory, it is essential to remove the support and all trays from the chamber. The non-perforated tray may only be used to sterilize turbines (handpieces) to prevent lubricant from being spread around the chamber. Only use perforated trays to sterilize packeted instruments and always remove non-perforated ones from the chamber. If the packets are not perfectly dry at the end of the sterilizing process, proceed with the supplementary drying cycle which can be selected with button **(1)**.

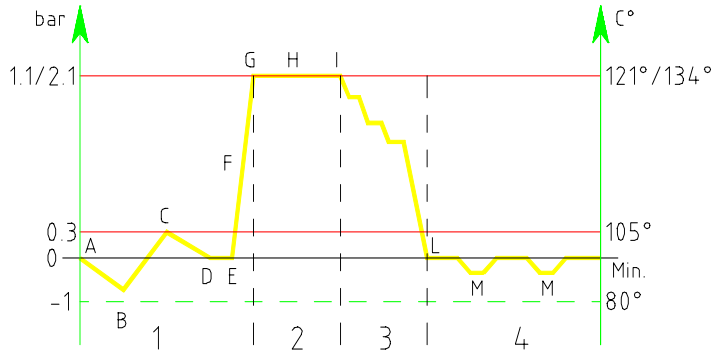
8.8 Cycle charts

STANDARD CYCLE (mod. STERILIX 2 PLUS only)



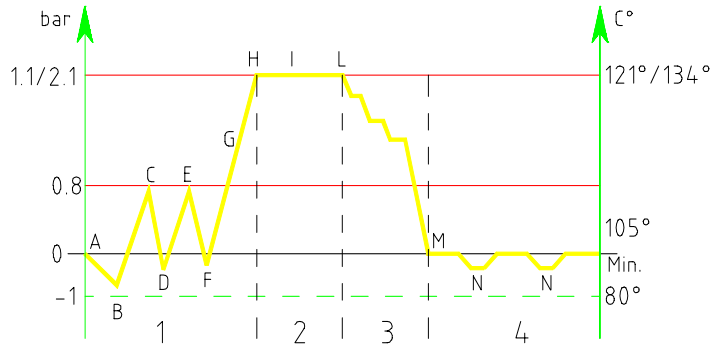
1) Balancing time
2) Sterilizing and T° upkeep
3) Drying
4) Upkeep
A - Door closing
C - Heating for 1 minute
D - Pressure relief down to 0 bar
E - Pressure starts to rise
F - 0.9 bar pressure check
G - Sterilizing begins
H - Constant monitoring of sterilizing process
I - Draining and start of drying phase
L - End of cycle and start of upkeep phase
M - Thermodynamic vacuum and drying

NON-FRACTIONATED CYCLE (STERILIX VACUUM PLUS, STERILIX STAR and STERILIX STAR FAST only)



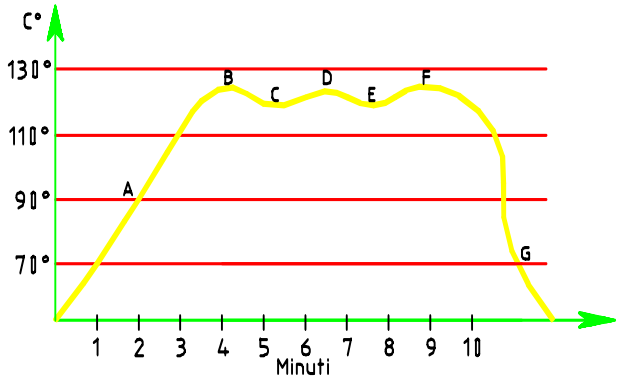
1) Balancing time with vacuum
2) Sterilizing and T° upkeep
3) Drying
4) Upkeep
A - Door closing
B - Vacuum and water added to chamber
C - Heating for 1 minute
D - Pressure relief down to 0 bar
E - Pressure starts to rise
F - 0.9 bar pressure check
G - Sterilizing begins
H - Constant monitoring of sterilizing process.
I - Draining and start of drying phase
L - End of cycle and start of upkeep phase
M - Thermodynamic vacuum and drying

FRACTIONATED CYCLE (mod. STERILIX STAR and STERILIX STAR FAST only)



1) Balancing time with vacuum
2) Sterilizing and T° upkeep
3) Drying
4) Upkeep
A - Door closing
B,C,D,E,F - Fractionated vacuum with 3 peaks
G - 0.9 bar pressure check
H - Sterilizing begins
I - Constant monitoring of sterilizing process
L - Draining and start of drying phase
M - End of cycle and start of upkeep phase
N - Thermodynamic vacuum and drying

SUPPLEMENTARY DRYING CYCLE (all models)



A - Temperature increase
B - Temperature reached
C - Temperature stabilizing
D,E,F - Constant temperature upkeep
G - Cooling

8.9 Monthly inspection proposal

Fac simile of an inspection form

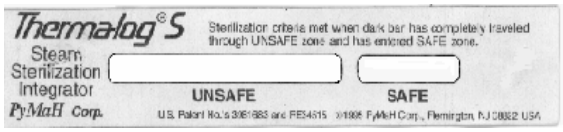
Sterilizer data			
Brand	Model	Year of purchase	Observations

Periodical internal inspection

	Date	Cycle length on display	Cycle temperature	Cycle temperature
EXAMPLE	07/11/2000	20’	134°	VAPOR LINE

The utilized indicator is enclosed for each inspection.

Always use biological indicators. 3 types of integrator are indicated as an alternative.

	VAPOR LINE (COD. 1468)	THERMALOG S	HELIX TEST* (COD.3369)
ORIGINAL		 Thermalog S Steam Sterilization Integrator PyMaH Corp. Sterilization criteria met when dark bar has completely traveled through UNSAFE zone and has entered SAFE zone. UNSAFE SAFE	
VEER		Thermalog S Steam Sterilization Integrator PyMaH Corp. Sterilization criteria met when dark bar has completely traveled through UNSAFE zone and has entered SAFE zone. UNSAFE SAFE	

* The indicator must be placed in the relative holder. Only use with the STERILIX STAR and STERILIX STAR FAST model in 134° cycles.

If the indicator fails to change colour, repeat the sterilizing phase a second time subtracting fewer minutes from the sterilizing cycle.
The DRY cycle (drying) should not be checked with the indicators.

8.10 Examples of correct cycle prints

FRA
Fractioned 134° DEDUCTION
(only STAR and STAR FAST)

```
CYCLE N      = 0002
TEMPERATURE =  69°C
START HEATING :
PAST TIME =   1'
TEMPERATURE =  71°C
VACUUM OK
PAST TIME =  16'
TEMPERATURE =  89°C
VACUUM OK
PAST TIME =  26'
TEMPERATURE =  97°C
VACUUM OK
PAST TIME =  32'
TEMPERATURE = 110°C
AIR EXIT-START PRESSURE
PAST TIME =  32'
PRESSURE 1BAR OK AT
TEMPERATURE = 115°C
PAST TIME =  41'
TEMPERATURE = 134°C
START STERRILIZ. :
TIME 20'  :  134° C
TIME 19'  :  134° C
TIME 18'  :  135° C
TIME 17'  :  134° C
TIME 16'  :  134° C
TIME 15'  :  134° C

START DRY CICLE
 ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^


TIME 14'  :  134° C
TIME 13'  :  118° C
TIME 12'  :  112° C
TIME 11'  :  105° C
TIME 10'  :  103° C
TIME  9'  :  103° C
TIME  8'  :  106° C
TIME  7'  :  106° C
TIME  6'  :  111° C
TIME  5'  :  111° C
TIME  4'  :  115° C
TIME  3'  :  114° C
TIME  2'  :  116° C
TIME  1'  :  115° C
PAST TIME =  61'
TEMPERATURE = 115°C
END CYCLE WITH :

DEDUCT TIME      : 15'
CYCLE TIME       : 35M
SELECTION TEMPERATURE 13
4

STERILIX
```

PR1
134° DEDUCTION
(only VACUUM PLUS, STAR and STAR FAST)

```
CYCLE N      = 0011
TEMPERATURE =  73°C
START HEATING :
PAST TIME =   0'
TEMPERATURE =  82°C
VACUUM OK
PAST TIME =   6'
TEMPERATURE = 105°C
AIR EXIT-START PRESSURE
PAST TIME =   8'
PRESSURE 1BAR OK AT  :
TEMPERATURE = 116°C
PAST TIME =  13'
TEMPERATURE = 134°C
START STERRILIZ. :
TIME 20'  :  134° C
TIME 19'  :  135° C
TIME 18'  :  135° C
TIME 17'  :  134° C
TIME 16'  :  134° C
TIME 15'  :  134° C

START DRY CICLE
 ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^


TIME 14'  :  134° C
TIME 13'  :  115° C
TIME 12'  :  115° C
TIME 11'  :  114° C
TIME 10'  :  121° C
TIME  9'  :  117° C
TIME  8'  :  121° C
TIME  7'  :  116° C
TIME  6'  :  118° C
TIME  5'  :  114° C
TIME  4'  :  116° C
TIME  3'  :  112° C
TIME  2'  :  113° C
TIME  1'  :  110° C
PAST TIME =  33'
TEMPERATURE = 111°C
END CYCLE WITH '

DEDUCT TIME      : 15'
CYCLE TIME       : 35M
SELECTION TEMPERATURE:13
4

STERILIX
```

PR2
121° DEDUCTION
(only VACUUM PLUS, STAR and STAR FAST)

```
CYCLE N      = 0010
TEMPERATURE =  50°C
START HEATING :
PAST TIME =   1'
TEMPERATURE =  50°C
VACUUM OK
PAST TIME =  11'
TEMPERATURE = 105°C
AIR EXIT-START PRESSURE
PAST TIME =  14'
PRESSURE 1BAR OK AT  :
TEMPERATURE = 116°C
PAST TIME =  17'
TEMPERATURE = 121°C
START STERRILIZ. :
TIME 30'  :  121° C
TIME 29'  :  122° C
TIME 28'  :  122° C
TIME 27'  :  121° C
TIME 26'  :  121° C
TIME 25'  :  121° C
TIME 24'  :  121° C
TIME 23'  :  121° C
TIME 22'  :  121° C
TIME 21'  :  121° C
TIME 20'  :  121° C
TIME 19'  :  121° C
TIME 18'  :  121° C
TIME 17'  :  121° C
TIME 16'  :  121° C
TIME 15'  :  121° C

START DRY CICLE
 ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^


TIME 14'  :  121° C
TIME 13'  :  109° C
TIME 12'  :  103° C
TIME 11'  :  101° C
TIME 10'  :  108° C
TIME  9'  :  101° C
TIME  8'  :  111° C
TIME  7'  :  105° C
TIME  6'  :  120° C
TIME  5'  :  111° C
TIME  4'  :  123° C
TIME  3'  :  116° C
TIME  2'  :  124° C
TIME  1'  :  117° C
PAST TIME =  47'
TEMPERATURE = 123°C
END CYCLE WITH :

DEDUCT TIME      : 15'
CYCLE TIME       : 45M
SELECTION TEMPERATURE:12
1

STERILIX
```

9. USEFUL INFORMATION

A – There is a **DEDUCTION (1)** key on the control panel that allows users to **shorten** the sterilizing time (from 1 to 12 minutes) if required, while maintaining the length of the drying cycle unchanged.
This key should be used once the program has been selected and immediately after the door has been shut, when the flashing number indicating the sterilizing minutes appears on the display.

NOTE The time reducing function should only be used when the chamber is loaded with **NON-PACKAGED** instruments and articles!

B – The machine has been designed to stop the sterilizing cycle in progress in the event of a power failure. In this case, message **[rEt]** will appear on the display.
If this happens, it will be necessary to repeat the sterilizing process by opening the door and activating the selected program again.

C - Sterilizer mod. **STERILIX VACUUM PLUS, STERILIX STAR and STERILIX STAR FAST** has a bacteriological filter to preserve packaged instruments with sterile air.

D – In compliance with EC standards, the autoclave has been fitted with a connection that allows a **PRINTER** to be installed (mod. M9002 without date stamp pr mod. M9003 with date stamp). This allows users to print out certain parameters of fundamental importance (e.g. the progressive number of the cycle). The printer produces a paper ticket certifying that the instruments have been sterilized along with the relative date.

10. KEY TO DISPLAYED MESSAGES

01 - tPt	Indicates a block status.
02 - rEt	Indicates that there has been a power failure during the sterilizing phase.
03 - dor	The user is asked to open the door
04 - SLP	Displayed after 1 hour, when the door is open and the machine is not being used: turns off the pre-heating element.
05 - Ptl	Indicates that the temperature is less than 110°C during the sterilizing phase, with a pressure of more than 0.8 bar in the chamber: air in the chamber.
06 - btP	Displayed if 35 min. have elapsed and the temperature has not reached at least 115°C.
07 - PrS	Displayed during the sterilizing process: Pressure less than 0.8 bar with a temperature of more than 120°C
08 - otr	Temperature in the boiler more than 142°C.
09 - Lot	Temperature in the boiler less than -5°C or probe broken.
10 - nPt	Temperature less than 50°C once 20 minutes have elapsed from the time the machine was powered.
11 - Hit	Boiler temperature over 160° or probe wire broken, or faulty probe connection.
12 - dPr	The machine has not carried out the vacuum phase.
13 - Pr0	This message is displayed at the beginning of the cycle when no program has been selected (select the program **without opening the door**).
14 - Pr1	Indicates that PROGRAM 1 has been selected. (134°)
15 - Pr2	Indicates that PROGRAM 2 has been selected. (121°)
16 - A-	Displayed during the DRYING PHASE: **A** = drying.
17 - Str	STERILIZED: indicates THAT THE STERILIZING OPERATIONS HAVE TERMINATED AND THAT THE CYCLE CONFORMS. BEGINNING OF THE UPKEEP CYCLE.
18 - 888	Temperature control test phase message.
19 - StP	Displayed during the PRINT phase (even when the printer is not connected).
20 - H2o	No water in fill tank (see filling procedure).
21 - FuL	Water level in tank sufficient for next cycle.
22 - PrE	Message lasting a few seconds. Precedes display of chamber temperature with door open alone.
23 - tEP	(For technicians only): Displays the temperature reached during the sterilizing phase.
24 - End	END OF STERILIZING CYCLE.
25 - PuP	(For technicians only): Water fill pump only activated in test function. (7)
26 - rES	(For technicians only): Heating element on to test real power draw of the heating element. (13)
27 - Elb	(For technicians only): N.O. solenoid. (14)
28 - Elc	(For technicians only): Chamber water inlet solenoid valve. (7+16)

29 - ElS	(For technicians only): Draining solenoid valve shut. (15)
30 - PoF	Machine status message. Pressure less than 0.8 bar. (1)
31 - Pon	Machine status message. Pressure higher than 0.8 bar. (1)
32 - S.L	Machine status message. Sufficient water in tank.
33 - APE	Machine status message. Door open.
34 - noL	Machine status message. Water below minimum level.
35 - CH.	Door shut.
36 - SCr	For technicians only.
37 - LEt	For technicians only.
38 - SI	Makes sure that the microprocessor is not faulty.
39 - Err	Microprocessor error
40 - - - -	On (electronic board powered).
41 -ACU	Maximum vacuum test.
42 - drY	Supplementary drying program to select after the sterilizing cycle has terminated.
43 - oCH	Vacuum OK message. There are no leaks in the hydraulic circuit of the machine.
44 - LLn	Vacuum faulty message. There are leaks in the hydraulic circuit of the machine.
45 - TEST VUOTO OK	Vacuum test message.
46 - USd	Message indicating dirty water in machine.
47 - FrA	Fractionated vacuum with 3 peaks before sterilizing
48 - ElP	(For technicians only): Vacuum pump N. C. solenoid

There is also an intermittent acoustic signal along with the fault messages. The machine will block.

RESET: The machine can be reset and made operative by pressing one of the 4 buttons or by powering the board again. The board will, however, abort the cycle and repeat the operations from the beginning (the door must be opened).

The **dor** message inhibits the board functions until the boiler door is opened.

Warning: if the machine is powered by the electricity main, electricians who check or test the electrical system must NEVER disconnect the power actuator (triac) for any reason whatsoever.

10.1 Troubleshooting: Solutions / Remedies

01- tPt	Repeat the sterilizing process or contact the after-sales service center.
02- rEt	Wait until the power supply returns. Check the socket and replace it if necessary. Eliminate any reductions / multiple sockets to which the machine may have been connected. Keep electronic machines well away from the appliance as they may create disturbance (e.g. ultrasound equipment, microwaves, cellular telephones or other equipment that emit radio frequencies). Do not touch the machine for 3 minutes wih the switch on. Once the 3 minutes have elapsed, the machine will make a double acoustic signal. Leave the main switch on. Make sure that the pressure gauge needle is on the "0" mark (zero). Open the door and keep the "DEDUCTION" key depressed for at least 5 seconds, then release it. The machine will reset automatically now to begin a new sterilizing cycle.
03- dor	Wait until the message stops flashing and then open the door.
04- SLP	Press any key to re-activate the functions if the machine must be used again, otherwise switch off the machine.
05- PtL	Repeat the sterilizing process if necessary. Contact the after-sales service center if the message appears again.
06- btP	Open the machine and repeat the sterilizing process. Contact the after-sales service center if the message appears again.
07- PrS	- there may be a short-circuit in the N.O. solenoid valve coil: replace the coil. - jamming or foreign bodies under the solenoid valve seals. Clean or replace the part. NOTE: this operation must only be carried out by After-sales Service staff. - water fails to enter the chamber even though the level gauge gives the green signal. - the internal temperature governor type PT 100 is badly calibrated. Regulate it by means of the internal TRIMMER. Check and calibrate the probe: NOTE: this operation must only be carried out by After-sales Service staff.
08- otr	Check and calibrate temperature probe type PT 100: NOTE: this operation must only be carried out by After-sales Service staff.
09- Lot	Autoclave on in a cold room: heat the room or check to make sure that the probe operates correctly.
10- ntP	- The wire of the heating element has probably detached. - Burnt-out heating element. - The connection does not conform to the heating element. - Faulty TRIAC: check the connections with a multimeter and replace the part if necessary. Use a genuine spare part and take great care to make the connections in the correct way. NOTE: this operation must only be carried out by After-sales Service staff.
11- HIt	Temperature too high: - Check and calibrate temperature probe type PT 100: NOTE: this operation must only be carried out by After-sales Service staff. - Faulty TRIAC: check the connections with a multimeter and replace the part if necessary. Use a genuine spare part and take great care to make the connections in the correct way. A wire of temperature probe type PT 100 has broken: check the connection terminal and replace the probe with a genuine spare if necessary. NOTE: both these operations must only be carried out by After-sales Service staff.

12- dPr	Too much moisture in the chamber before the sterilizing cycle starts: after having opened the door, deactivate the alarm by pressing the selected program for 3 sec., then repeat the cycle.
44- LLn	Contact the After-sales Service Center if the fault occurs again. Check all the vacuum pump pipes. Replace them with genuine spares if they are damaged. Check all the solenoid valves to make sure that there are no leaks and clean and/or replace the cores if necessary. NOTE: this operation must only be carried out by the After-sales Service staff. Check whether the pressure gauge pointer drops below –0.45 Bar because this means that there is certainly a vacuum in the chamber and that the pressure switch setting must therefore be checked.
19- StP	Connect the printer used to check and file the data.
20- H2o	Fill the tank with distilled or demineralized water using the supplied accessories.
39- Err	(For technicians only): Repeat the microprocessor re-generating process.
42- drY	Supplementary drying cycle repeatable several times. To use when normal drying has not been sufficient. Press DEDUCT with the door open to select the supplementary drying cycle. The cycle lasts 9 minutes.
46- USd	Make sure that the can that collects used water is not too full. If connections between the autoclave and drain pipe are incorrect. Faults involving the drain pipe (clogged or partially blocked). Remove the pipe from the direct drain and place it in the supplied can.

11. MAINTENANCE

Carry out the maintenance operations with the machine at a standstill, after having removed the plug from the power socket and after having allowed the components to cool down.
The declaration of conformity to the standards in force is not valid unless the maintenance operations described below are carried out.

11.1 General maintenance

The machine needs to be serviced in a particular way. Users are therefore advised to comply with the below listed recommendations:

- Periodically check the condition of the electrical system with particular attention to the connection cable. **Contact our Technical Assistance Service or specialized personnel if faults are discovered.**
- Periodically clean the door, the seal and take particular care when cleaning the **internal part of the boiler**, removing any scaling with the damp sponge (supplied with the machine). Correct cleaning of these parts of the machine will ensure that the sterilizing cycle takes place in the right way.
- If the machine is not to be used for a long period of time, leave the door ajar and store it at a room temperature of >8°C.
- Use a damp cloth to clean the casing of the machine. Never ever use inflammable liquids for any reason whatsoever.
- The bacteriological filter in mod. **STERILIX VACUUM PLUS, STAR and STAR FAST** must be changed at least once a year. New ones can be ordered with code 1067.

11.2 Daily routine maintenance

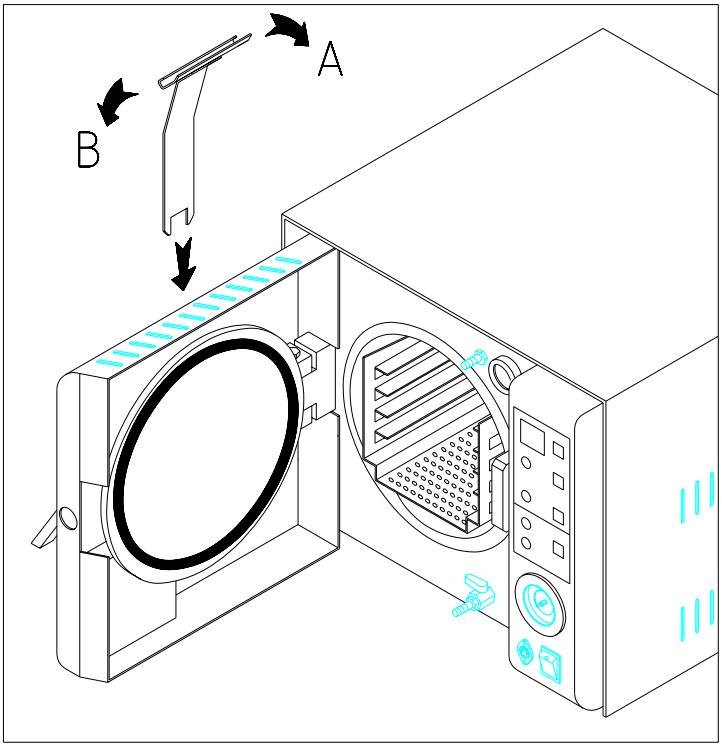
Clear the door seal, door window and generally clean the outer and inner surfaces of the machine.
Clean the black silicone door seal, the outer and inner edges and the part where the door rests on the sterilizing chamber and on which the seal must tightly fit. Use the supplied sponge to do this. The soft part of the sponge can be used to clean the seal while the rough part can be used to clean the edge of the chamber.
This cleaning operation must be carried out regularly to remove all impurities that could lead to loss of pressure inside the sterilizing chamber.
Check the used water level and drain off the actual water into the sewer if necessary. Then wash out the can under running water.

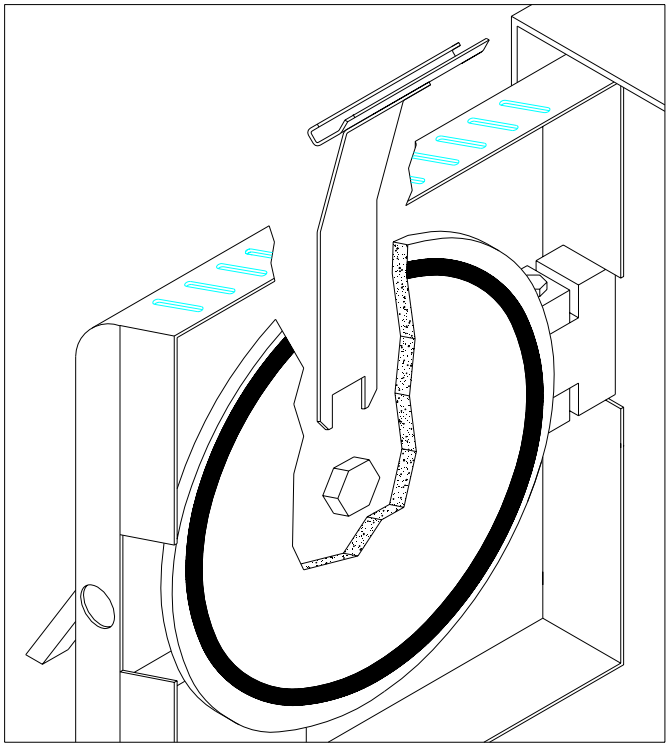
11.3 Weekly routine maintenance

Cleaning the sterilizing chamber (cleaning the trays and tray holders.
As specified in section 12.1 " General maintenance ", all traces of deposits must be removed from the bottom of the chamber. Use the rough side of the supplied sponge for this operation, attempting to eliminate any scaling that may have formed.
Rinse everything with the same water used for the sterilizing process. The trays and tray-holders must also be cleaned in this way.

11.4 Monthly routine maintenance

Lubricate the pins and locking mechanisms.
Check the movement of the hinge and door locking pin. Lubricate with Vaseline oil.
Make sure that the door is well regulated. If it is excessively slack, it must be adjusted by means of the supplied wrench. Turn the regulator at the rear of the door in a (A) direction. This will increase the pressure exercised by the seal.
Attempt to shut the door. If some difficulty is encountered, turn the regulator in an (B) direction with the supplied wrench.
Clean the entire autoclave cabinet with a slightly damp sponge, including the door casing.
Check and/or replace bacteriological filter Code. 1067 once a year.





11.5 Periodic extraordinary maintenance

To allow the autoclave to operate in a regular way, the manufacturer advises users to carry out a functional test to ensure that the temperature and pressure parameters of the machine comply with the standards required for a correct sterilizing process.
These tests must be conducted by personnel authorized by the manufacturer, using calibrated and periodically certified instruments.
The autoclave can also be sent to the manufacturer for this test, after form 32/A has been filled out and accepted.
The autoclave is able to accept probes for the sterilizing tests.
It is advisable to have the appliance subjected to a Total Overhaul by After-sales Service staff at least once every 12 months.
The operation of the safety valve installed at the rear of the machine must also be checked at least once every 12 months. This is done by removing the protective casing and re-tightening the ring nut of the valve by hand. To prevent accidents, this operation should obviously be carried out when the machine is cold and off.

11.6 Recommended inspections and replacements (after about 1000 cycles)

1) Make sure that the safety valve functions correctly.
- Remove the protective casing
- Carry out the 134° cycle and when the maximum pressure has been reached (2.2 bar), unscrew and retighten the knurled ring nut on the safety valve.
- Check to make sure that steam issues by unscrewing the ring nut and, vice versa, that total retention is achieved by tightening the same knurled ring nut again.
2) Replace the bacteriological filter
3) Clean and inspect the sterilizing chamber (there must be no trace of scaling or coloured tarnishing)
4) Make sure that the cock (14) is not clogged by blowing through it with a little compressed air.
5) Check the condition of the door seal (change it if it is cut or torn).
6) Make sure that the micro and micro-pressing system allows the door to close correctly. Lubricate with a silicone spray.
7) Replace the filter on the water fill line.

Intervention date……signature of the authorized technician……
N.B. to send back as photocopy if the building factory required it.

11.7 Corrective actions to prevent faults

1) Change the water inlet filter (internal) code 1484.
2) Clean the "Y" shaped filter (if installed) code 3136, and replace its seal, code 3188.
3) Clean the water filling tank probes, code 0262.
4) Replace the diaphragm and head seal of the vacuum pump (specify the model or serial number of the machine).
5) Replace the N.O. solenoid valve or coil, code 1015.
6) Before closing up the machine, generally inspect the internal components to make sure that they are in a good condition.
7) After these operations have been carried out, print out the report on the first cycles to make sure that the sterilizer operates in a normally efficient way.

12. FAULTS WITHOUT MESSAGES

1) **The machine fails to come on when the main switch is turned to position 1.**

Remedy:

A) Check the power socket. If it fails to comply, have it replaced with a suitable one (16 A. 230 Volts).

B) Use a tester to make sure that the fuses installed behind the inside machine are functional. Replace them if necessary, remembering to fully tighten the fuse-holder screws in the correct way.

C) Use a tester to check the voltage rating of the socket. We recommend the SCHUKO type (for technicians only).

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2) **Switch N° 10 comes on but there is no signal on the display.**

Remedy:

A) Demount the casing and make sure that the fuses on the electronic board are well connected.

B) If the fuses on the board have burnt out they must be replaced with others of an equal value as shown on the labels affixed near them.

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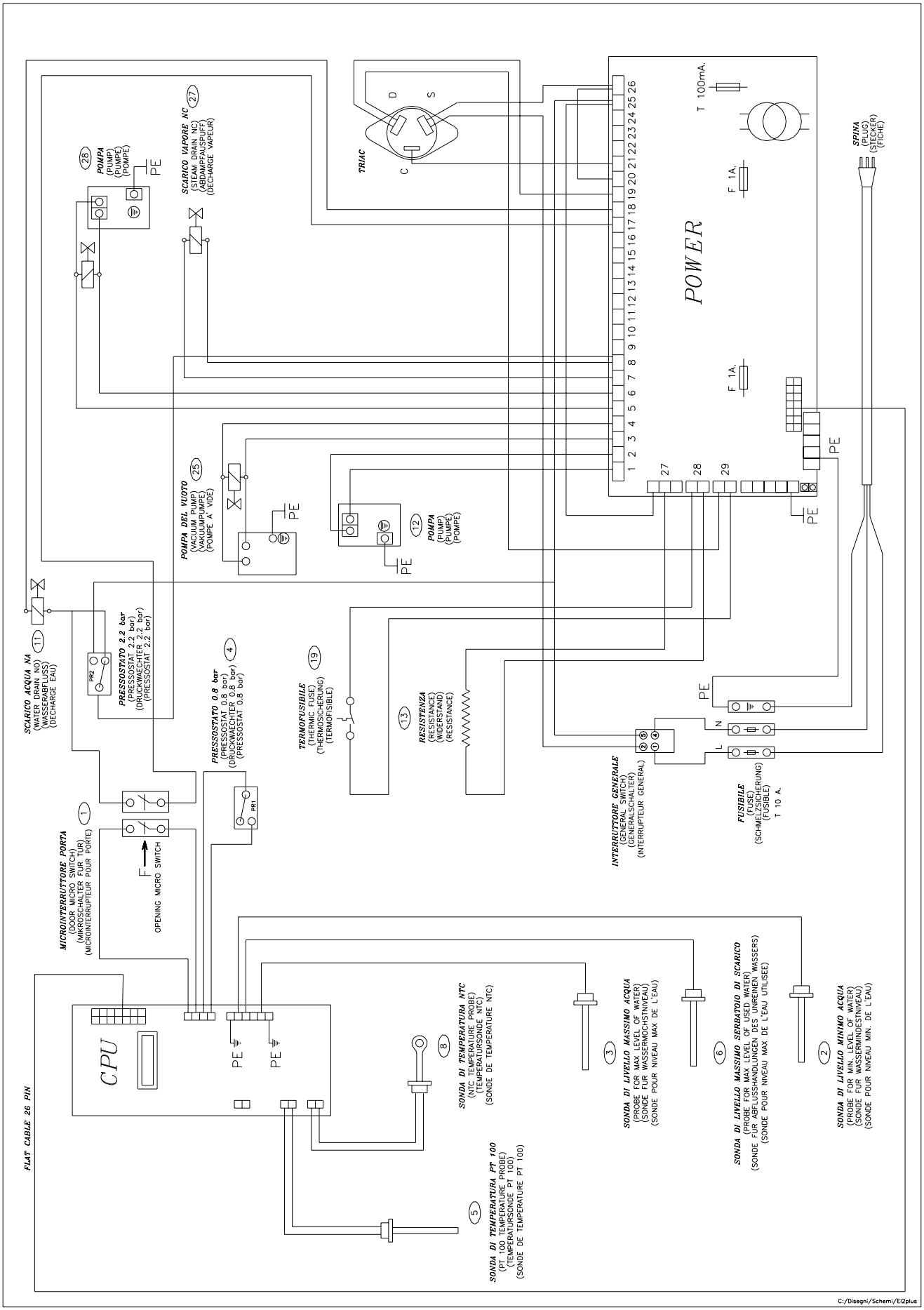
3) **The cycle fails to start at once. High temperature in the chamber (between 90° and 130°) with flashing sequence.**

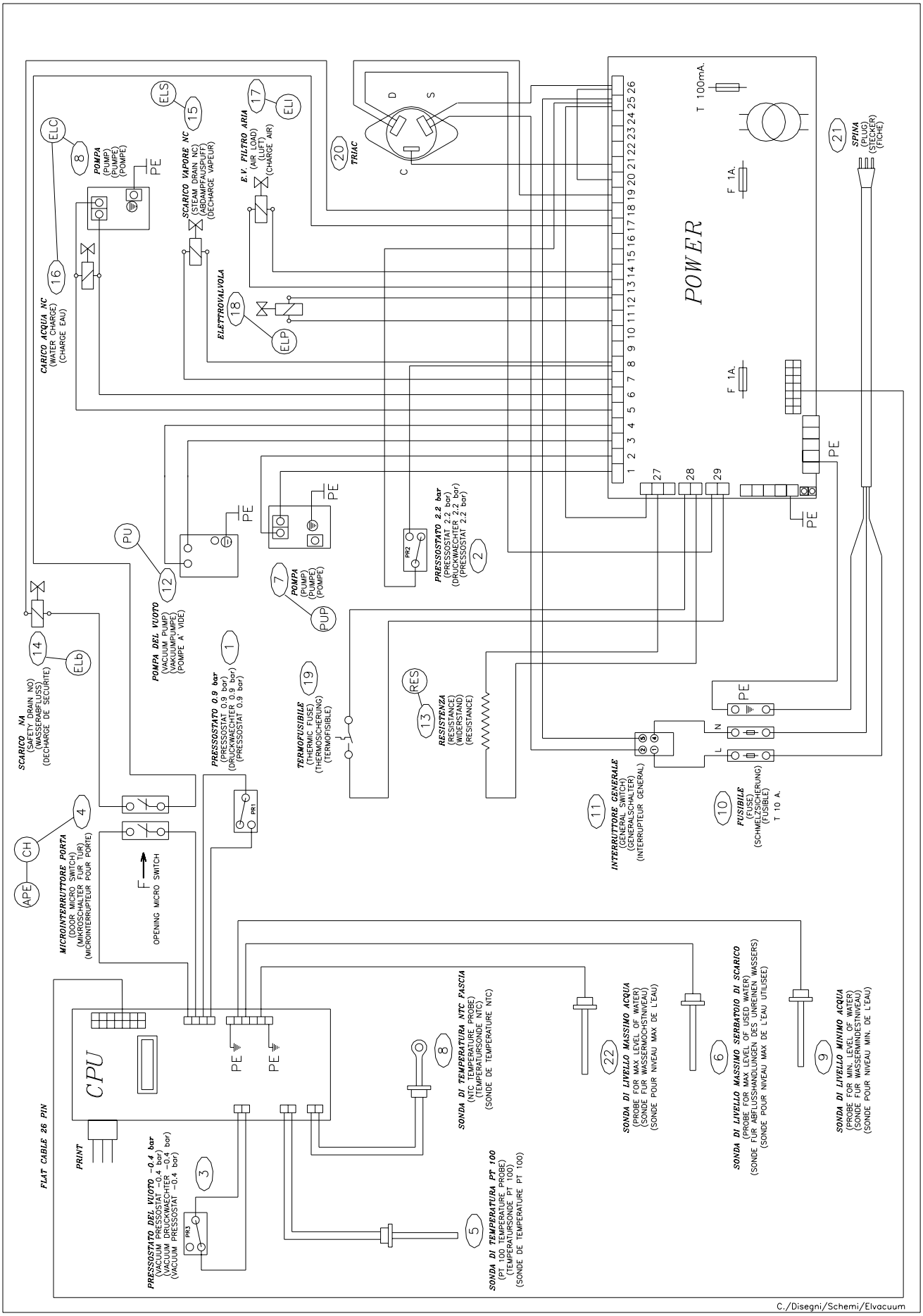
Remedy:

A) The cycle will automatically start when the temperature in the chamber has dropped to below 90°.

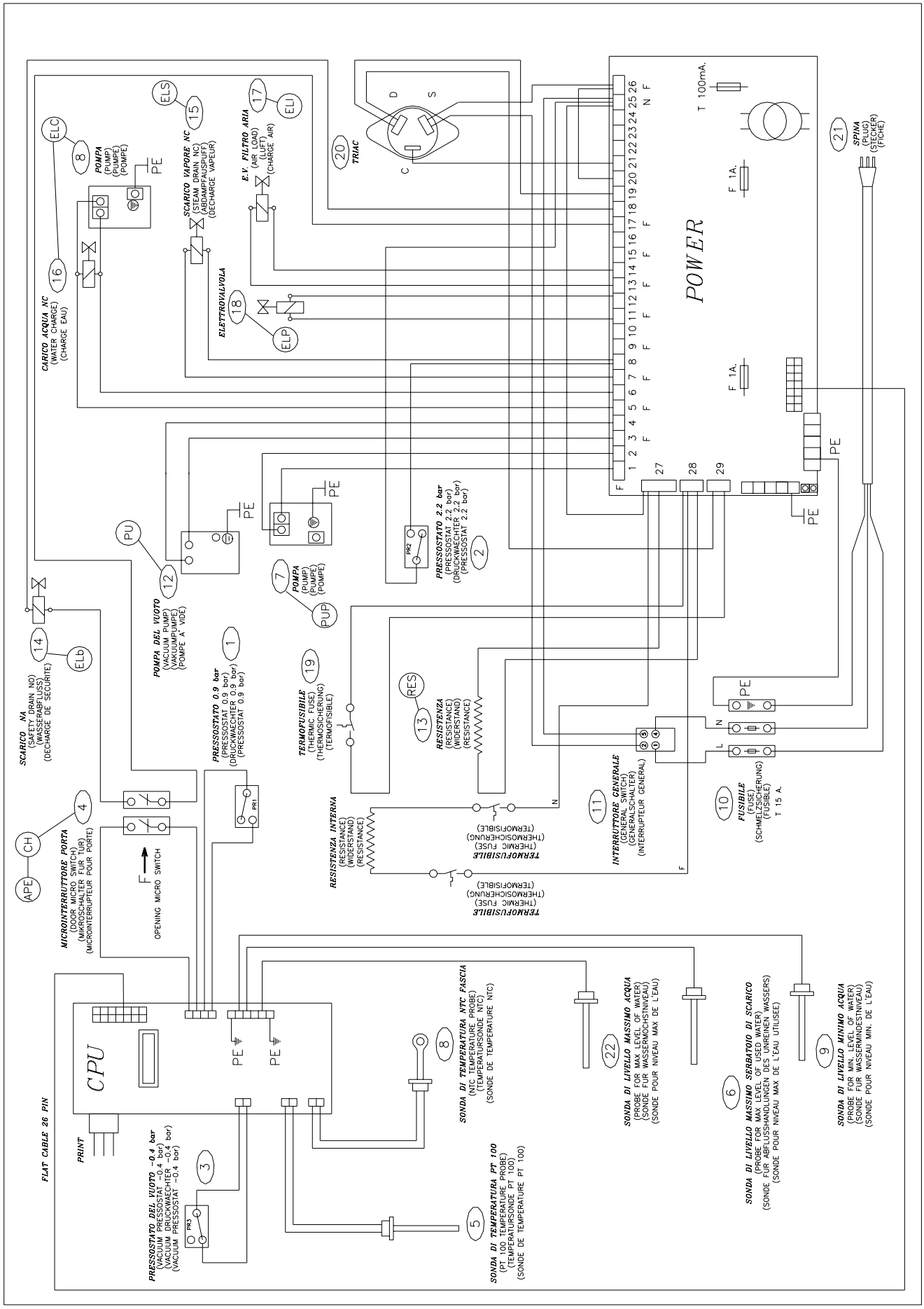
STERILIX 2 PLUS ELECTRICAL SYSTEM:



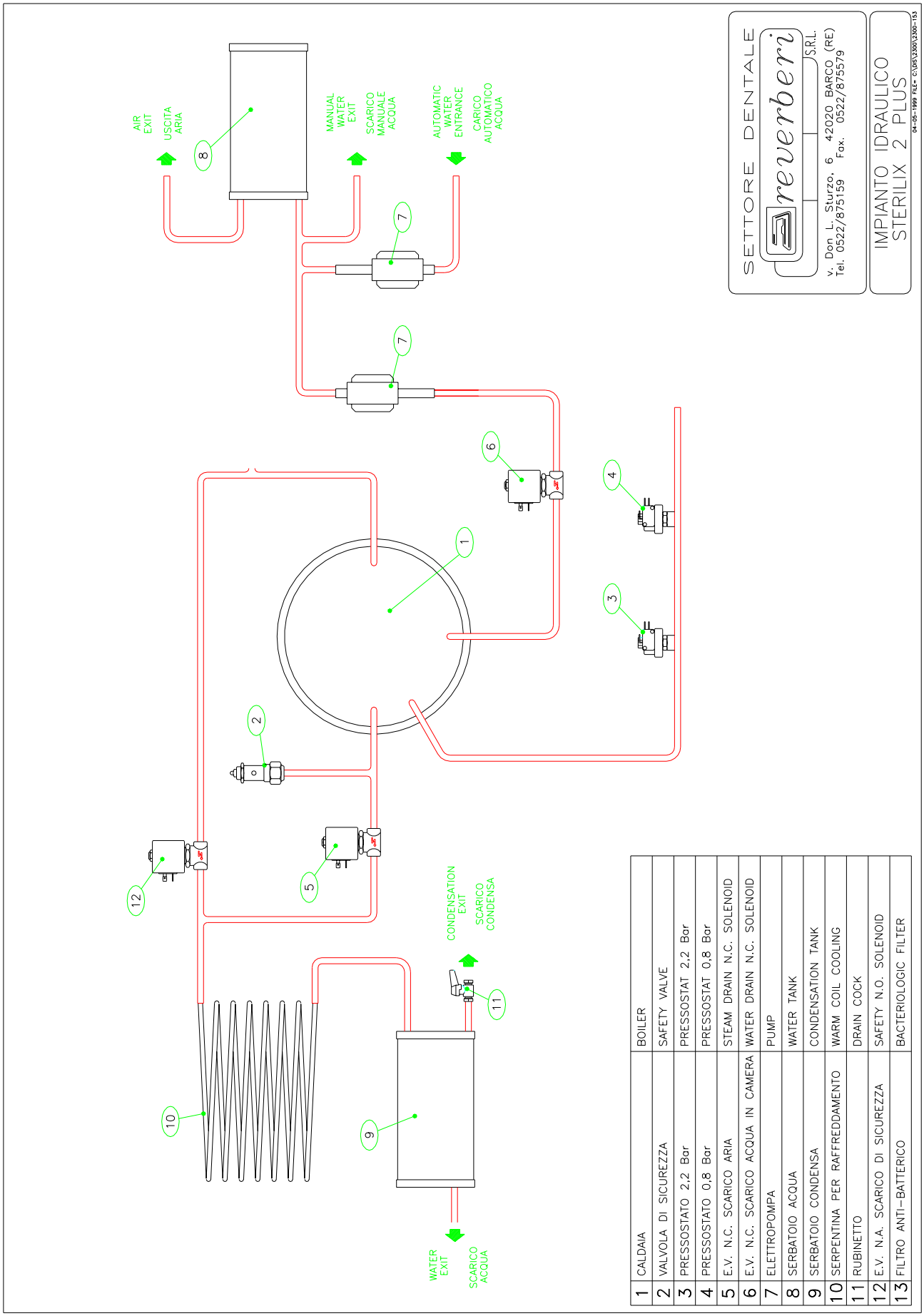
STERILIX VACUUM PLUS / STERILIX STAR ELECTRICAL SYSTEM:


POWER
CPU
PRINT
FLAT CABLE 26 PIN
C./Disegni/Schemi/Elvacuum
CARICO ACQUA NC (WATER CHARGE) (CHARGE EAU)
POMPA (PUMP) (POMPE)
SCARICO VAPORE NC (STEAM DRAIN NC) (ABDAMPFAUSLAUF) (DECHARGE VAPEUR)
E.V. FILTRO ARIA (AIR LOAD) (LUFT) (CHARGE AIR)
ELETTROVALVOLA
TRIAC
SPINA (PLUG) (STECKER) (FICHE)
T 100mA.
F 1A.
SCARICO NA (SAFETY DRAIN NO) (WASSERABFLUSS) (DECHARGE DE SECURITE)
POMPA DEL VUOTO (VACUUM PUMP) (VAKUUMPUMPE) (POMPE A VIDE)
PRESSOSTATO 0.9 bar (PRESSOSTAT 0.9 bar) (DRUCKWAECHTER 0.9 bar) (PRESSOSTAT 0.9 bar)
PRESSOSTATO 2.2 bar (PRESSOSTAT 2.2 bar) (DRUCKWAECHTER 2.2 bar) (PRESSOSTAT 2.2 bar)
TERMOFUSIBILE (THERMIC FUSE) (THERMOSICHERUNG) (TERMOFISIBLE)
RESISTENZA (RESISTANCE) (WIDERSTAND) (RESISTANCE)
INTERRUTTORE GENERALE (GENERAL SWITCH) (GENERALSCHALTER) (INTERRUPTEUR GENERAL)
FUSIBILE (FUSE) (SCHMELZSICHERUNG) (FUSIBLE) T 10 A.
MICROINTERRUTTORE PORTA (DOOR MICRO SWITCH) (MIKROSCHALTER FUR TUR) (MICROINTERRUPTEUR POUR PORTE)
OPENING MICRO SWITCH
PRESSOSTATO DEL VUOTO -0.4 bar (VACUUM PRESSOSTAT -0.4 bar) (VACUUM DRUCKWAECHTER -0.4 bar) (VACUUM PRESSOSTAT -0.4 bar)
SONDA DI TEMPERATURA NTC FASCIA (NTC TEMPERATURE PROBE) (TEMPERATURSONDE NTC) (SONDE DE TEMPERATURE NTC)
SONDA DI TEMPERATURA PT 100 (PT 100 TEMPERATURE PROBE) (TEMPERATURSONDE PT 100) (SONDE DE TEMPERATURE PT 100)
SONDA DI LIVELLO MASSIMO ACQUA (PROBE FOR MAX LEVEL OF WATER) (SONDE FUR WASSERHOCHSTNIVEAU) (SONDE POUR NIVEAU MAX DE L'EAU)
SONDA DI LIVELLO MASSIMO SERBATOIO DI SCARICO (PROBE FOR MAX LEVEL OF USED WATER) (SONDE FUR ABFLUSSHANDLUNGEN DES URETEN WASSERS) (SONDE POUR NIVEAU MAX DE L'EAU UTILISEE)
SONDA DI LIVELLO MINIMO ACQUA (PROBE FOR MIN. LEVEL OF WATER) (SONDE FUR WASSERMINDESTNIVEAU) (SONDE POUR NIVEAU MIN. DE L'EAU)

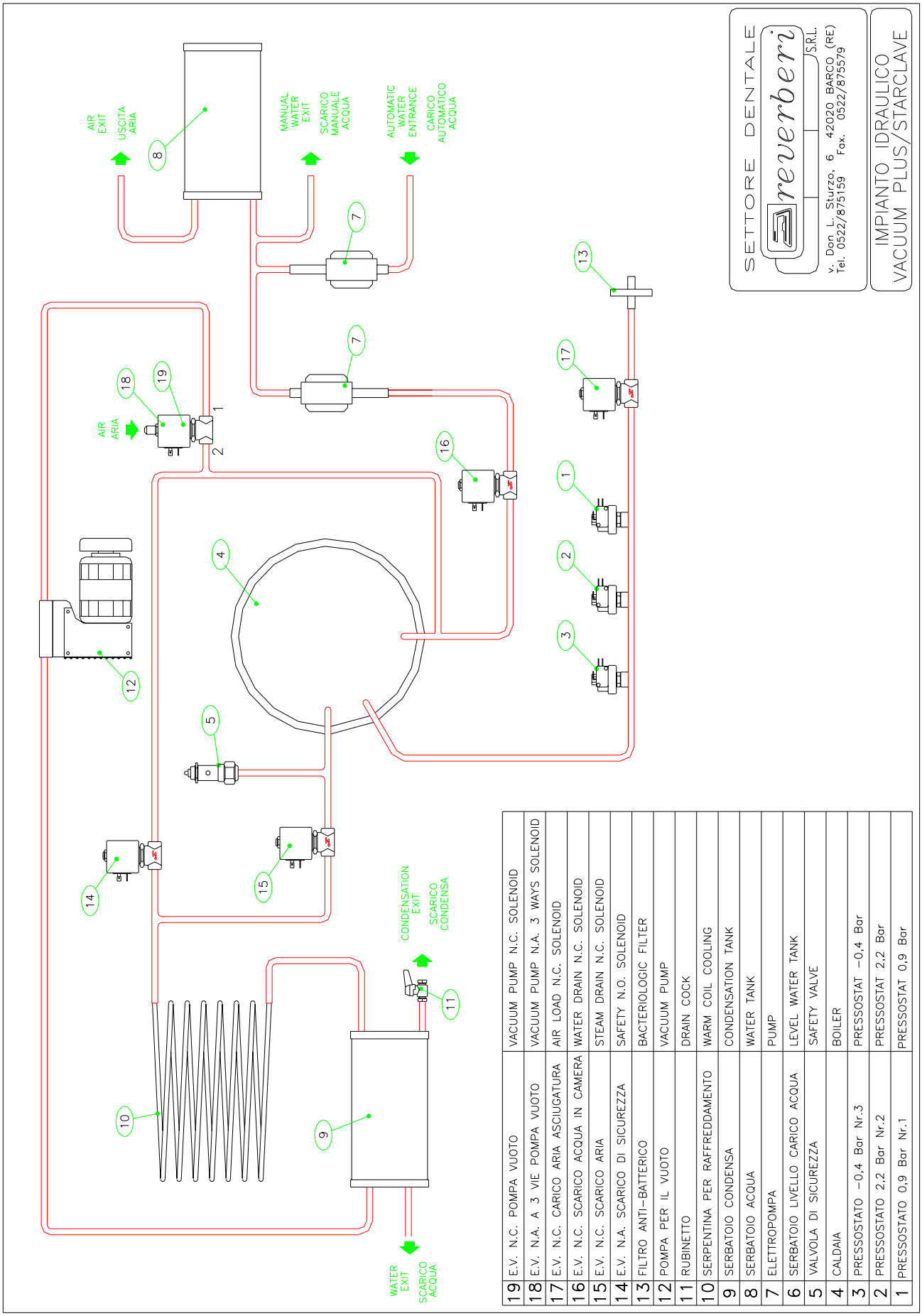
STERILIX STERILIX STAR FAST ELECTRICAL SYSTEM:


POWER
CPU
PRINT
FLAT CABLE 26 PIN
T 100mA.
F 1A.
F 1A.
SPINA (PLUG) (STECKER) (FICHE)
TRIAC
SCARICO VAPORE NC (STEAM DRAIN NC) (ABDAMPFAUSLAUF) (DÉCHARGE VAPEUR)
E.V. FILTRO ARIA (AIR LOAD) (LUFT) (CHARGE AIR)
ELETTROVALVOLA
CARICO ACQUA NC (WATER CHARGE) (CHARGE EAU)
POMPA (PUMP) (POMPE)
SCARICO NA (SAFETY DRAIN NO) (WASSERABLASS) (DÉCHARGE DE SÉCURITÉ)
POMPA DEL VUOTO (VACUUM PUMP) (VAKUUMPUMPE) (POMPE A' VIDE)
PRESSOSTATO 0.9 bar (PRESSOSTAT 0.9 bar) (DRUCKWAECHTER 0.9 bar) (PRESSOSTAT 0.9 bar)
PRESSOSTATO 2.2 bar (PRESSOSTAT 2.2 bar) (DRUCKWAECHTER 2.2 bar) (PRESSOSTAT 2.2 bar)
TERMOFUSIBILE (THERMIC FUSE) (THERMOSICHERUNG) (TERMOFISIBLE)
RESISTENZA (RESISTANCE) (WIDERSTAND) (RESISTANCE)
RESISTENZA INTERNA (RESISTANCE) (WIDERSTAND) (RESISTANCE)
INTERRUTTORE GENERALE (GENERAL SWITCH) (GENERALSCHALTER) (INTERRUPTEUR GENERAL)
FUSIBILE (FUSE) (SCHMELZSICHERUNG) (FUSIBLE) T 15 A.
MICROINTERRUTTORE PORTA (DOOR MICRO SWITCH) (MIKROSCHALTER FUR TUR) (MICROINTERRUPTEUR POUR PORTE)
OPENING MICRO SWITCH
PRESSOSTATO DEL VUOTO -0.4 bar (VACUUM PRESSOSTAT -0.4 bar) (VACUUM DRUCKWAECHTER -0.4 bar) (VACUUM PRESSOSTAT -0.4 bar)
SONDA DI TEMPERATURA PT 100 (PT 100 TEMPERATURE PROBE) (TEMPERATURSONDE PT 100) (SONDE DE TEMPERATURE PT 100)
SONDA DI TEMPERATURA NTC FASCIA (NTC TEMPERATURE PROBE) (TEMPERATURSONDE NTC) (SONDE DE TEMPERATURE NTC)
SONDA DI LIVELLO MASSIMO ACQUA (PROBE FOR MAX LEVEL OF WATER) (SONDE FUR WASSERHÖCHSTNIVEAU) (SONDE POUR NIVEAU MAX DE L'EAU)
SONDA DI LIVELLO MASSIMO SERBATOIO DI SCARICO (PROBE FOR MAX LEVEL OF USED WATER) (SONDE FUR ABFLUSSHANDLUNGEN DES UNREINEN WASSERS) (SONDE POUR NIVEAU MAX DE L'EAU UTILISEE)
SONDA DI LIVELLO MINIMO ACQUA (PROBE FOR MIN. LEVEL OF WATER) (SONDE FUR WASSERMINDESTNIVEAU) (SONDE POUR NIVEAU MIN. DE L'EAU)
PE
N
L
F
D
S
C

STERILIX 2 PLUS HYDRAULIC CIRCUIT:



VACUUM PLUS / STAR / STAR FAST HYDRAULIC CIRCUIT:



19	E.V. N.C. POMPA VUOTO	VACUUM PUMP N.C. SOLENOID
18	E.V. N.A. A 3 VIE POMPA VUOTO	VACUUM PUMP N.A. 3 WAYS SOLENOID
17	E.V. N.C. CARICO ARIA ASCIUGATURA	AIR LOAD N.C. SOLENOID
16	E.V. N.C. SCARICO ACQUA IN CAMERA	WATER DRAIN N.C. SOLENOID
15	E.V. N.C. SCARICO ARIA	STEAM DRAIN N.C. SOLENOID
14	E.V. N.A. SCARICO DI SICUREZZA	SAFETY N.O. SOLENOID
13	FILTRO ANTI-BATTERICO	BACTERIOLOGIC FILTER
12	POMPA PER IL VUOTO	VACUUM PUMP
11	RUBINETTO	DRAIN COCK
10	SERPENTINA PER RAFFREDDAMENTO	WARM COIL COOLING
9	SERBATOIO CONDENSA	CONDENSATION TANK
8	SERBATOIO ACQUA	WATER TANK
7	ELETTROPOMPA	PUMP
6	SERBATOIO LIVELLO CARICO ACQUA	LEVEL WATER TANK
5	VALVOLA DI SICUREZZA	SAFETY VALVE
4	CALDAIA	BOILER
3	PRESSOSTATO -0,4 Bar Nr.3	PRESSOSTAT -0,4 Bar
2	PRESSOSTATO 2,2 Bar Nr.2	PRESSOSTAT 2,2 Bar
1	PRESSOSTATO 0,9 Bar Nr.1	PRESSOSTAT 0,9 Bar

reverberi

Via Don Luigi Sturzo n°6
42020 BARCO (Reggio Emilia) ITALY
Tel. 0039 (0)522 / 875159
Fax 0039 (0)522 / 875579

FORM TO FILL OUT WHEN APPLIANCES ARE RETURNED FOR REPAIRS

To be filled out by the:

Installer or authorized person

Autoclave mod..... Serial N° .....

At .....

Situated in .....address.....

Purchase invoice N° ..... of .....

Issued by Company .....

Date of first installation ..... by Mr. .....

Was the warranty form sent to the manufacturer when appliance was first installed? ❑ yes ❑ no

Reason why the machine must be sent back to the Manufacturer:

PERIODIC CALIBRATION ❑ REQUEST FOR REPAIR UNDER GUARANTEE ❑

REPAIR SUBJECT TO PAYMENT ❑ OTHER..... ❑

FAULT ENCOUNTERED: Which message appears on the display? .....

.....

.....

.....

.....

.....

BEFORE SENDING BACK THE AUTOCLAVE, PLEASE COMPLY WITH THE FOLLOWING INSTRUCTIONS:

1. Before sending back the machine, fill out this form and send it via fax to N° 0039 0522 875579 then await our instructions for dispatch. ❑
2. The warranty will become void if the machine is sent back without prior authorization. ❑
3. If possible, allow the machine to operate until the minimum level Led comes on. ❑
4. Empty the used water from the tank. ❑
5. Place a folded piece of newspaper between the door and chamber and then shut the autoclave to prevent one of the two parts from being damaged during transport. ❑
6. Remove the tray-holder. Do not send it back with the machine. ❑
7. Send the autoclave packed in the original wrapping in which it was purchased. ❑
8. Install the substitute machine (if applicable) in compliance with the recommendations in the maintenance manual. ❑

The installer hereby declares that the indicated operations have been carried out, that the machine supplied as a substitute has been installed in compliance with the instructions in the maintenance manual and that it functions perfectly. The technician also declares that the form with the test results of the first installation has been filled out and sent off along with the warranty form.

Date ..... Installer's signature .....

It is obligatory for the installer to fill out all parts of this form and to declare that he has complied with all the conditions ensuring that the appliance is correctly installed in compliance with sect. 5.2 of the instruction manual.

The installer also declares that he has duly trained the user to operate the machine, with the help of the instruction manual.

The technician declares that he has attached the printer ticket to this form along with the warranty form, duly filled out in all parts.

The above mentioned documents must be immediately forwarded to the manufacturer.

Notes and/or considerations .....

.....

.....

.....

Installer's signature and date

.....

WARRANTY CERTIFICATE

This document certifies that the appliance has been correctly manufactured.
The appliance will be repaired if it operates in a faulty way during the warranty period owing to manufacturing defects, the manufacturer's judgement over such matters being final.
The sterilizing chamber is covered by guarantee for a period of 60 (sixty) months from the date of purchase. This date shall be testified by the enclosed coupon, which must be filled out, duly stamped and signed by the technician who took part in the installation course.
The sales invoice or consignment note shall bear witness in the event of disputes.
The electrical, electronic parts and nuts and bolts are guaranteed for a period of 12 (twelve) months.
The warranty covers the sole replacement or repair of those parts recognized as possessing manufacturing defects, travel and call costs excluded.
Replaced parts shall be returned free port. The ordering party shall be charged for any part that is not returned.
All appliances returned for repairs shall only be sent to us free port after authorization and shall be adequately packed, with the sender's name, address and claimed defect clearly indicated.
The appliance remains the property of the seller until is has been fully paid for by the purchaser.

THE WARRANTY SHALL BECOME VOID:

1. If the appliance has been repaired, modified or tampered with by the purchaser or by unauthorized third parties.
2. If the purchaser fails to contact the seller or authorized technical center.
3. 18 months from the date of our consignment note.
4. If the customer delays or suspends payments.
5. If the appliance has been damaged by exposure to fire, spilt liquids, natural disasters, has been dropped or damaged by causes that are not ascribable to manufacturing defects.
6. When the warranty form has not been duly filled out, signed and returned to the manufacturer within the established time.
7. If the customer uses the appliance improperly, fails to carry out the routine maintenance operations or services the appliance in a neglectful way.

WARRANTY CERTIFICATE and stamped

APPLIANCE:

The undersigned reseller certifies that the warranty has been examined and
certifies that the appliance has been consigned and installed in compliance with the instructions given

by the manufacturer on:……..

By Mr. ……

Address ……..

ZIP Code …… City ……..

1 – FOR THE PURCHASER

…….. TECHNICAL INSTALLER SIGNATURE AND STAMP*	reverberi Via Don Luigi Sturzo, 6 42020 BARCO (Reggio Emilia) ITALY

✂ ✂

THIS PART OF THE CERTIFICATE MUST BE SENT BACK BY REGISTERED LETTER WITHIN 8 DAYS FROM THE DATE OF PURCHASE

WARRANTY CERTIFICATE

TO BE RETURNED SIGNED AND STAMPED

APPLIANCE:

The undersigned reseller certifies that the warranty has been examined and
certifies that the appliance has been consigned and installed in compliance with the instructions given

by the manufacturer on:……..

By Mr. ……

Address ……..

ZIP Code …… City ……. Buyer signature…….

2 –FOR THE MANUFACTURER

…….. RESELLER'S SIGNATURE AND STAMP	reverberi Via Don Luigi Sturzo, 6 42020 BARCO (Reggio Emilia) ITALY

* The technical installer must be authorized by the building factory.

reverberi
MEDICAL DIVISION

Via Don Luigi Sturzo nº 6
42020 BARCO (Reggio Emilia)
Tel. +39 – 0522 - 875159 / 875195
Fax +39 – 0522 - 875736 / 875579
ITALIA

ISO 9001 – EN 13485

DICHIARAZIONE DI CONFORMITÀ. DECLARATION DE CONFORMITÈ. DECLARATION OF CONFORMITY. DECLARACION DE CONFORMIDAD. KONFORMITATSERKLARUNG.

STERILIZZATRICE A VAPORE. MACHINE POUR STERILISER A VAPEUR. STEAM STERILIZER MACHINE. ESTERILIZADORAS DE VAPOR. DAMPFSTERILISATOREN.

Mod:	*Art.*	
M9010/14	***STERILIX 2 PLUS***	**DDM 93/42 CEE**
M9010/15/01	***STERILIX VACUUM PLUS***	
M9010/12/02	***STERILIX STAR***	

La Reverberi s.r.l. dichiara sotto la propria responsabilità che i prodotti elencati sono conformi alle norme:

La maison Reverberi s.r.l. déclare sous sa responsabilité que les produit enumeres sont conformes aux directives:

The company Reverberi s.r.l. declare under own exclusive responsability that the product listed are in conformity with the normatives:
Reverberi s.r.l. declara bajo su propia responsabilidad que los productos mencionados estan conformes a las normas siguientes:
Reverberi s.r.l. erklart unter seiner cigenen verantwortung, daB die aufgelisteten produkte den vorschriften:

**EN 61010-1 : 1993 + A2 : 1995, EN 61010-2-041 : 1996,
EN 61000-3-2 : 1995 + A1 : 1998 + A2 : 1998,
EN 60555-3 : 1987+A1 : 1991, EN 55011 : 1998, EN 50082-2 : 1995,
EN97/23/CEE.**

BARCO (RE)
18-04-2003

……..
Pres. (REVERBERI ARNALDO)